

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

A 280.39
m34Am
Cop. 3

AMS-514

CURRENT SERIAL RECORDS

SEP 30 1963

U. S. DEPT. OF AGRICULTURE
LIBRARY

DATA

On Proposed Changes in **WHEAT STANDARDS**

U. S. DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Grain Division

SEPTEMBER 1963

CONTENTS

	Page
Why changes in standards are needed	4
Importance of wheat exports	5-9
Wheat exports by class and flour exports (Figure 1)	5
Wheat exports by class and flour exports (Table 1)	6
Wheat and flour exports by type of contract (Table 2)	7
Wheat and flour exports by country of origin (Table 3)	8
Percent of commercial world exports by country of origin (Table 4)	9
Data on changing Western White Wheat to Mixed White Wheat	10-12
Production of all wheat, Common White and White Club (Table 5) .	10
Acreage of all wheat and White Wheat (Table 6)	11
White Wheat exports by subclass (Table 7)	12
Data on dockage	12-24
Amount of dockage by class of wheat (Table 8)	12
Durum Wheat inspections, dockage at 0.1 percent intervals (Figure 2)	14
Durum Wheat inspections, dockage under present standards, proposed change, and alternate proposal (Figure 3)	15
Hard Red Spring Wheat inspections, dockage at 0.1 percent intervals (Figure 4)	16
Hard Red Spring Wheat inspections, dockage under present standards, proposed change, and alternate proposal (Figure 5)	17
Hard Red Winter Wheat inspections, dockage at 0.1 percent intervals (Figure 6)	18
Hard Red Winter Wheat inspections, dockage under present standards, proposed change, and alternate proposal (Figure 7)	19
White Wheat inspections, dockage at 0.1 percent intervals (Figure 8)	20
White Wheat inspections, dockage under present standards, proposed change, and alternate proposal (Figure 9)	21
Soft Red Winter Wheat inspections, dockage at 0.1 percent intervals (Figure 10)	22
Soft Red Winter Wheat inspections, dockage under present standards, proposed change, and alternate proposal (Figure 11)	23

CONTENTS (Continued)

	Page
Dockage at 0.1 percent intervals (Table 9)	24
Dockage in wheat exports (Table 10)	25
Data on total defects	26-29
Total defects in wheat, by specified States (Table 11)	26
Total defects in Hard Red Spring and Hard Red Winter Wheat (Table 12)	27
Comparison of present and proposed factors for grade No. 1 wheat (Figure 12)	28
Comparison of present and proposed factors for grade No. 2 wheat (Figure 13)	29
Data on shrunken and broken kernels	30-31
Shrunken and broken kernels determined by sieve only (Table 13)	30
Shrunken and broken kernels in Durum Wheat (Table 14)	31
Data on moisture limits	32-34
Percent of inspections with specified amounts of moisture (Table 15)	33
Moisture in wheat exports (Table 16)	34
Data on special grade "Heavy Wheat"	35
Test weight per bushel by class (Table 17)	35
Data on "wheat of other classes"	36
Amount of "wheat of other classes" by class of wheat (Table 18)	36

DATA ON PROPOSED CHANGES IN WHEAT STANDARDS

Why Changes in Standards Are Needed

Wheat marketing in the United States, including pricing of wheat for its intrinsic value, has made vast changes since standards were originally established. Today this country produces all principal classes of wheat in quantities and qualities sufficient for domestic and export demand. No other country has this range of production.

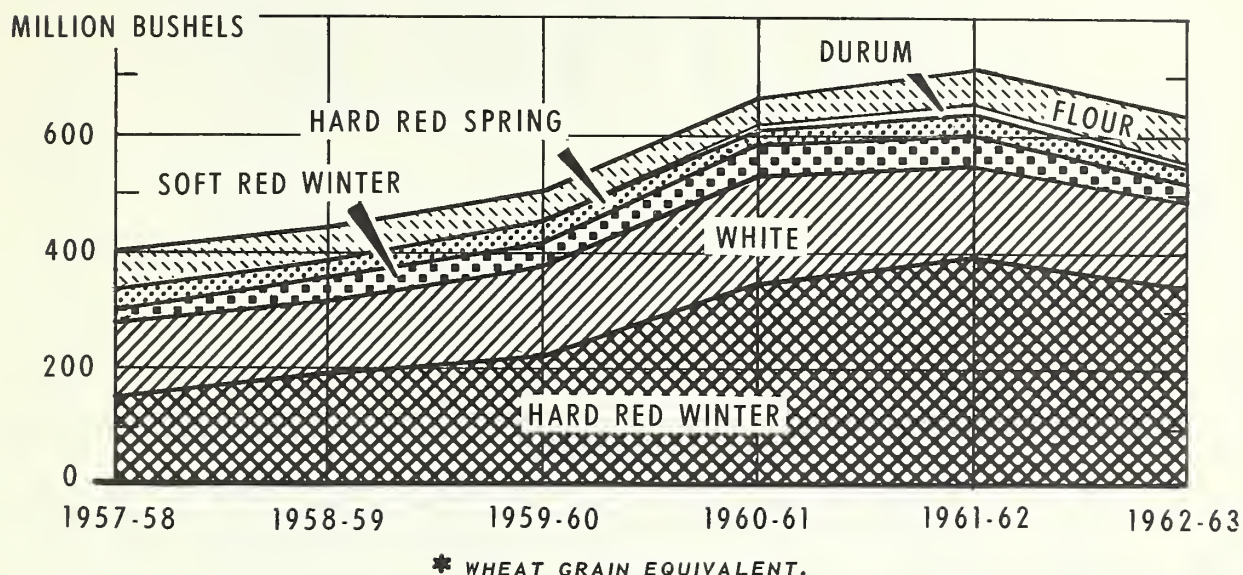
Official standards for wheat were established under the United States Grain Standards Act of 1916 and became effective July 1, 1917, for certain classes and August 1, 1917, for the others. They were developed almost exclusively for the domestic market. While some revisions have been made, the basic factors have remained largely unchanged. Many large domestic users have developed their own system of buying based on factors more precise, more time consuming and more expensive than official standards; such as protein tests, sedimentation tests, baking tests, and flour scores. Today the official standards serve only an elementary facet of the pricing process in a market for which they were originally designed.

The proposals would adjust the standards to improvements that have been made in cultural and handling practices in the growing of wheat and the better quality farm crop that has resulted. They consider the improvements that have been made in the methods of drying, cleaning, and handling grain, as well as the methods of measuring quality.

The data in this publication is intended to provide factual information on the effect of the proposed changes to wheat marketing under the grade standards.

The data applies primarily to the proposed changes on which both favorable and unfavorable expressions of opinion have been received from various segments of the wheat industry. Data is not presented on all proposed changes.

FIGURE 1—EXPORTS: WHEAT INSPECTED FOR EXPORT, BY CLASS, AND FLOUR *
EXPORTED, UNITED STATES, JULY 1957 THROUGH JUNE 1963



U. S. DEPARTMENT OF AGRICULTURE

NEG. AMS 579-63 (9) AGRICULTURAL MARKETING SERVICE

Importance of Wheat Exports

The wheat industry of the United States, with an annual production in excess of one billion bushels, must look beyond the domestic market to export outlets. Annual exports of wheat and flour (in wheat equivalent) have exceeded 500 million bushels since 1959 (Table 1). Foreign buyers depend almost entirely on official standards to measure the quality of wheat they buy. Although our total exports have increased, our cash sales for export have actually declined (except for two good years, 1960-61 and 1961-62) (Table 2). Other countries have forged ahead in commercial exports of wheat (Table 3). The United States' share of commercial wheat exports has dropped sharply between the crop years 1951 and 1961 (Table 4). The smaller share of dollar exports is undoubtedly due to several reasons, but complaints from abroad indicate that the broad grade factor tolerances in our standards are an important reason.

Table 1.--Wheat, exports: Wheat inspected for export, by class, and wheat and flour exported, United States, 1957-62

Class	Year beginning July						
	1962	1961	1960	1959	1958	1957	
	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	
Hard Red Spring.....	25,270	29,101	25,334	35,744	31,999	27,947	
Hard Red Winter.....	342,968	396,117	348,308	216,373	193,946	147,534	
Soft Red Winter.....	36,569	52,375	51,819	36,973	39,655	23,734	
Durum.....	3,314	15,878	5,256	-0-	-0-	293	
White.....	113,512	112,105	132,208	123,033	92,401	110,908	
Mixed.....	12,405	1,777	2,439	766	3,393	17,308	
Total wheat inspected.....	534,038	607,353	565,364	412,889	361,394	327,724	
Total volume of wheat & flour 1/.....	635,409	718,392	662,173	509,820	443,338	402,393	

1/ Total of flour and wheat - Data from Foreign Agricultural Service M-142, 127, & 115 and Agricultural Conservation and Stabilization Service

2/ Grain Market News, AMS, Vol. 11, No. 28, July 12, 1963
 Vol. 10, No. 28, July 13, 1962
 Vol. 9, No. 28, July 14, 1961
 Vol. 8, No. 28, July 15, 1960
 Vol. 7, No. 27, July 10, 1959
 Vol. VI, No. 28, July 11, 1958

Table 2.--Wheat, exports: Wheat and flour 1/exported from the United States by type of contract, 1957-62

Type of contract	Year beginning July					
	1962 <u>2</u> /	1961 <u>3</u> /	1960 <u>3</u> /	1959 <u>3</u> /	1958 <u>3</u> /	1957 <u>3</u> /
	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.
Title I.....	416,738	379,110	327,214	300,648	227,914	179,023
Title II.....	45,737	25,702	30,490	10,722	10,861	14,290
Barter.....	8,121	41,337	34,090	25,662	20,062	9,807
Aid.....	2,334	2,539	35,568 <u>4</u> /	13,264 <u>4</u> /	23,946 <u>4</u> /	25,713 <u>4</u> /
Section 416.....	22,280	35,098	30,358	24,258	20,216	17,916
Title IV.....	6,618	7,286	-0-	-0-	-0-	-0-
All programs.....	501,828	491,072	457,720	374,554	302,999	246,749
Cash.....	133,581	227,320	204,453	135,266	140,346	155,644
Total.....	635,409	718,392	662,173	509,820	443,338	402,393

1/ Grain Equivalent

2/ Grain Market News, AMS, Vol. 11, No. 28, July 12, 1963

3/ U. S. Grain Exports Under Government Programs, Foreign Agricultural Service M-142 (1961-62)
M-127 (1960-61)
M-115 (1959-60)
(1958-59)
(1957-58)

4/ Section 402

Table 3.--Wheat, exports: Commercial wheat and flour exports, by country of origin, 1950-61

Year beginning July	Major exporting countries							
	United States	Canada	Australia	Argentina	France	U.S.S.R.	Others	Total
	Mil. bu.	Mil. bu.	Mil. bu.	Mil. bu.	Mil. bu.	Mil. bu.	Mil. bu.	Mil. bu.
1961.....	227.3	358.7	229.8	86.5	68.1	174.1	91.5	1,236.0
1960.....	204.4	334.7	183.2	70.2	57.3	189.9	71.7	1,111.4
1959.....	135.3	271.6	115.9	77.5	64.9	202.8	100.6	968.6
1958.....	140.3	283.2	75.2	102.8	38.8	220.3	140.1	1,000.7
1957.....	155.6	287.1	60.7	77.7	83.7	144.5	104.2	913.5
1956.....	173.5	281.0	125.5	98.1	14.4	159.8	99.1	951.4
1955.....	104.9	288.5	101.7	115.1	98.6	37.3	77.7	823.8
1954.....	115.6	253.3	93.2	132.0	88.0	19.8	109.5	811.4
1953.....	116.0	282.4	71.0	110.4	40.2	28.9	123.9	772.8
1952.....	287.6	378.7	99.4	29.3	20.4	37.1	91.7	944.2
1951.....	315.4	342.2	99.2	30.0	15.1	39.1	60.5	901.5
1950.....	192.6	212.3	127.3	103.4	36.9	26.9	55.7	755.1

Foreign Agricultural Service, Grain & Feed Division

Table 4.--Wheat, exports: Commercial 1/wheat exports, by country of origin, 1950-61

Year beginning July	Major exporting countries									
	United States	Canada	Australia	Argentina	France	U.S.S.R.	Others	Total		
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
1961.....	18.4	29.0	18.6	7.0	5.5	14.1	7.4	100.0		
1960.....	18.4	30.0	16.5	6.3	5.2	17.1	6.5	100.0		
1959.....	14.0	28.0	12.0	8.0	6.7	20.9	10.4	100.0		
1958.....	14.0	28.3	7.5	10.3	3.9	22.0	14.0	100.0		
1957.....	17.0	31.4	6.6	8.5	9.3	15.8	11.4	100.0		
1956.....	18.2	29.5	13.2	10.3	1.5	16.9	10.4	100.0		
1955.....	12.7	35.0	12.3	14.0	12.1	4.5	9.4	100.0		
1954.....	14.3	31.2	11.5	16.3	10.8	2.4	13.5	100.0		
1953.....	15.0	36.6	9.2	14.3	5.2	3.7	16.0	100.0		
1952.....	30.5	40.1	10.5	3.1	2.2	3.9	9.7	100.0		
1951.....	35.0	38.0	11.0	3.3	1.7	4.3	6.7	100.0		
1950.....	25.5	28.1	16.8	13.7	4.9	3.6	7.4	100.0		

1/ Cash sales for United States, cash sales and short term credit for other countries

Foreign Agricultural Service, Grain & Feed Division

Table 5.--White wheat production: Production of all wheat, common white, white club and all other varieties, Pacific Northwest, 1957-62

Year beginning July	All wheat	Common white	White club	Other varieties
	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>	<u>1,000 bu.</u>
1962.....	97,422	56,111	36,858	4,453
1961.....	80,984	22,838	53,935	4,211
1960.....	96,429	20,154	70,971	5,304
1959.....	107,877	29,774	70,552	7,551
1958.....	105,350	26,653	67,529	11,168
1957.....	101,712	34,481	53,704	13,527

Wheat Production in Certain Pacific Northwest Countries, 1957-62, by Varieties,
Pacific Northwest Crop Improvement Association, May 1963, 1961, 1960

Data on Changing Western White Wheat to Mixed White Wheat

The relative importance of the various wheat varieties has changed substantially during the past six years. An indicator of this change is the quantity of common white and white club produced (Table 5). Approximately 9 percent of the wheat acreage in the United States is devoted to the white wheat varieties (Table 6). Susceptibility to rust of the dominant variety of white club has reduced the production of this class about one-half in the last three years. The quantity of white wheat available for blending in the subclass Western White Wheat has been substantially reduced.

Ninety-five percent of white wheat exports from the West Coast in 1963 was Western White Wheat (Table 7). Permissible limits to the content of this subclass are as follows: (1) Must contain more than 10 percent white club and (2) must contain more than 10 percent of other white wheats. Thus, the composition of Western White may range from 11 percent to 89 percent white club. The milling industry recognizes differences in protein content between specific subclasses of white wheat. The best end use is contingent upon the knowledge of the amount of white club in the subclass Western White. Knowledge of the composition of Western White is essential to specification buying and long-run demand. The variability in the quantity of white club in Western White, as is evident today, is causing dissatisfaction with Western White Wheat in the export market because of the lack of knowledge of its performance in end use.

Table 6.--Wheat, acreage: Estimated acreage of all wheat and white wheat for major white wheat States, 1959, and United States, 1959 and 1954

State	All wheat	White wheat
	<u>Acres</u>	<u>Acres</u>
New York	291,000	277,538
New Jersey	66,000	920
Pennsylvania	563,000	4,968
Ohio	1,578,000	1,524
Illinois	1,777,000	635
Michigan	1,206,000	1,001,627
Missouri	1,705,000	3,504
Maryland	179,000	323
North Carolina	431,000	315
Tennessee	206,000	2,896
Montana	4,391,000	19,058
Idaho	1,247,000	604,806
Wyoming	293,000	2,823
Colorado	2,842,000	1,369
New Mexico	285,000	340
Arizona	109,000	97,601
Utah	244,000	63,772
Nevada	22,000	21,967
Washington	2,115,000	1,809,643
Oregon	853,000	830,047
California	407,000	384,205
United States 1959	57,848,000	5,223,825
United States 1954	61,971,000	5,157,147

Distribution of Varieties and Classes of Wheat in the United States, Statistical Bulletin No. 272 and Agricultural Handbook No. 108, January 1957, United States Department of Agriculture

Table 7.--White wheat exports: Volume of white wheat exports, by subclass, west coast markets, fiscal year 1963

Markets	Hard White	Soft White	Western White	White Club	Total
	Bu.	Bu.	Bu.	Bu.	Bu.
Los Angeles, Calif.:	170,264	-0-	-0-	-0-	170,264
San Francisco, Calif.:	264,179	330,995	112,236	-0-	707,410
Stockton, Calif.:	679,408	328,153	73,490	-0-	1,081,051
Portland, Oreg.:	7,840	101,343	78,815,478	2,709,232	81,633,893
Seattle, Wash.:	-0-	-0-	16,167,552	986,240	17,153,792
Total	1,121,691	760,491	95,168,756	3,695,472	100,746,410

Table 8.--Wheat, dockage: Percentage of federally supervised receipts of wheat, with specified amounts of dockage, by class, average fiscal years 1961 and 1962

Class	Dockage Content				No. of lots
	0.3% or more	0.5% or more	0.8% or more	1.0% or more	
Hard Red Spring....:	97.2	87.1	66.8	54.4	17,494
Durum.....:	95.7	81.3	59.2	48.6	4,261
Hard Red Winter....:	92.5	64.0	23.5	11.3	37,967
White.....:	88.4	73.1	49.5	34.4	11,195
Soft Red Winter....:	69.1	26.4	7.8	4.7	8,226

Form GR-189, Federal Supervised Inspected Receipts

Data on Dockage

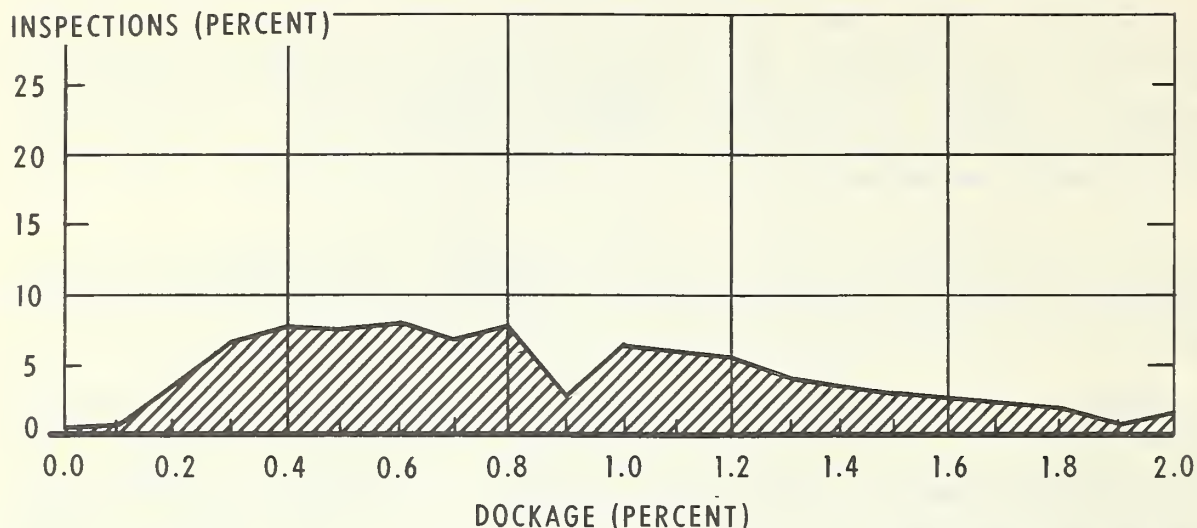
Dockage is not a grade determining factor in the U. S. grade standards. It consists of material that can be easily removed in the cleaning process. Wheat, as it comes from the harvest fields, contains a certain amount of non-wheat material. It is a common practice to clean wheat at the elevators to remove chaff, straw, weed seeds, and any other material other than wheat before grading and marketing.

Most wheat is not officially sampled and graded at the time it is received at the country elevator from the producer. The practice of assessing dockage at country elevators varies widely from one area to another, depending in part upon the intensity of competition.

Wheat as it comes from country elevators is substantially more free of dockage today than that shipped 10 years ago. Analysis of receipts of Hard Red Spring Wheat and Durum Wheat at Minneapolis from country elevators showed dockage content averaged lower each year from a high of 1.8 percent in 1952-53 to 0.7 percent in 1961-62. If this trend is continuing, as trade reports indicate, the dockage content of wheat at country elevators should be a less serious problem than that shown by earlier data. Most of the charts and tables on dockage, presented on the following pages, are for the years beginning July 1, 1960 and July 1, 1961.

Studies made by State agricultural experiment stations show that dockage in wheat as it comes from the producer is lower than at later steps in the marketing channels. Analyses of federally supervised inspection certificates of wheat receipts have been made for wheat receipts throughout the United States at country elevators, sub-terminal elevators, terminal elevators, and port elevators. The findings presented in Figures 2 through 11 are combined results of tabulations of dockage receipts at the various levels of marketing. Thus, dockage findings are higher than at the country elevator level of marketing, but not as high as that revealed in the wheat cargo export survey (Table 10).

FIGURE 2--DURUM WHEAT: PERCENT OF RECEIPT INSPECTIONS WITH DOCKAGE
RECORDED AT 0.1 PERCENT INTERVALS, AVERAGE FISCAL YEARS 1961-62



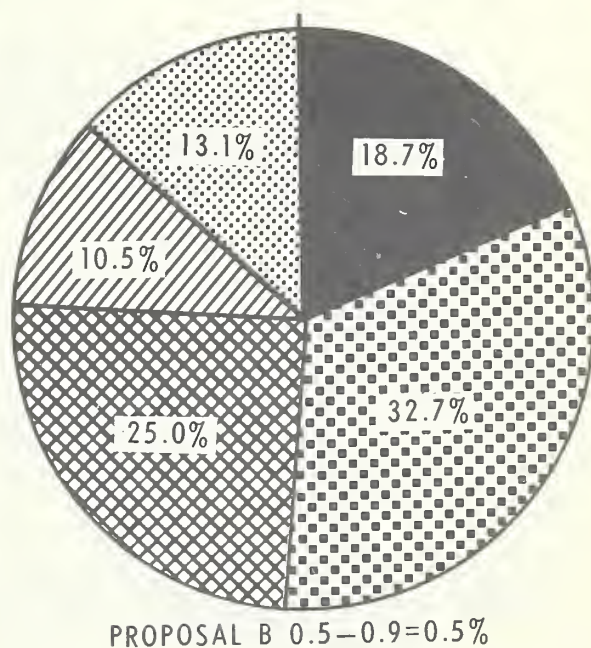
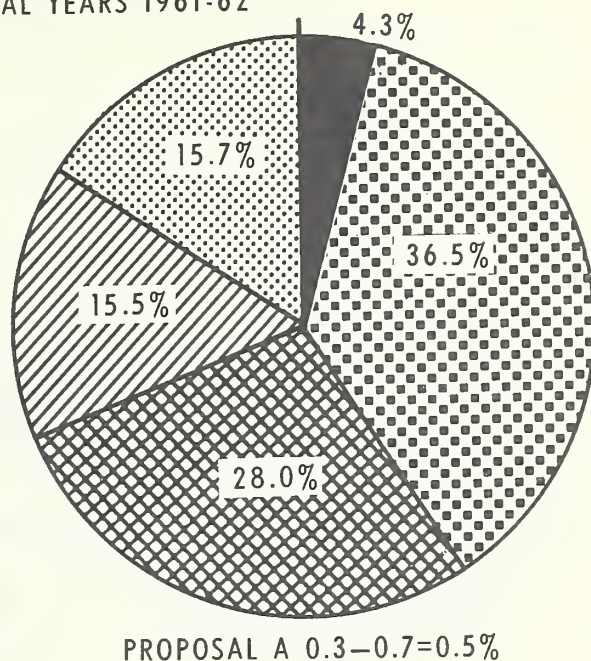
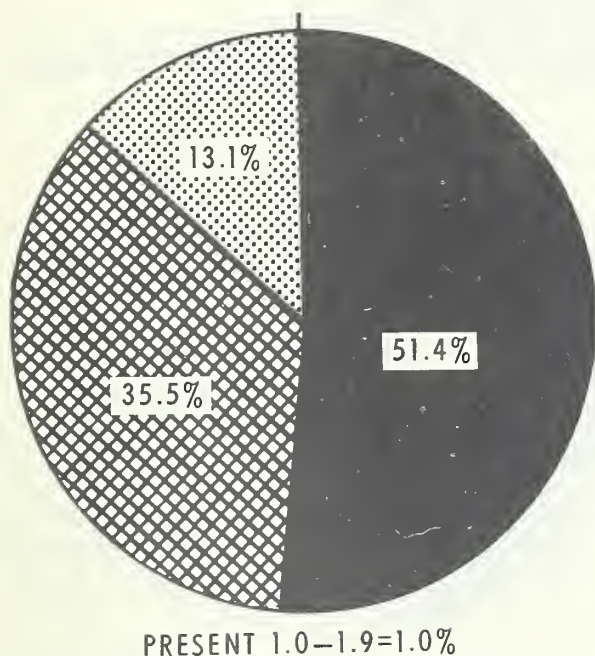
U. S. DEPARTMENT OF AGRICULTURE

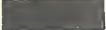




NEG. AMS 580-63 (9)

AGRICULTURAL MARKETING SERVICE

Under the present standards, almost half of all lots of supervised receipts of Durum Wheat contained 1 percent or more dockage. The proposed revision would show 0.5 percent dockage for 36 percent of receipts and 1 percent or more dockage for 60 percent of receipts, if subsequent inspections contain as much dockage as in 1961 and 1962. Under the alternate proposal on dockage, only one-third of the receipts would show 0.5 percent dockage. Since the data for projecting the effect of the proposed change in dockage and the alternate proposal are based on dockage determinations of receipt inspections at all levels of wheat marketing, it is expected that the proposals would have less effect at the producer and country elevator levels.

FIGURE 3--DURUM WHEAT: PERCENT OF RECEIPT INSPECTIONS WITH SPECIFIED AMOUNTS OF DOCKAGE UNDER PRESENT STANDARDS AND ALTERNATE PROPOSED REVISIONS, AVERAGE OF FISCAL YEARS 1961-62

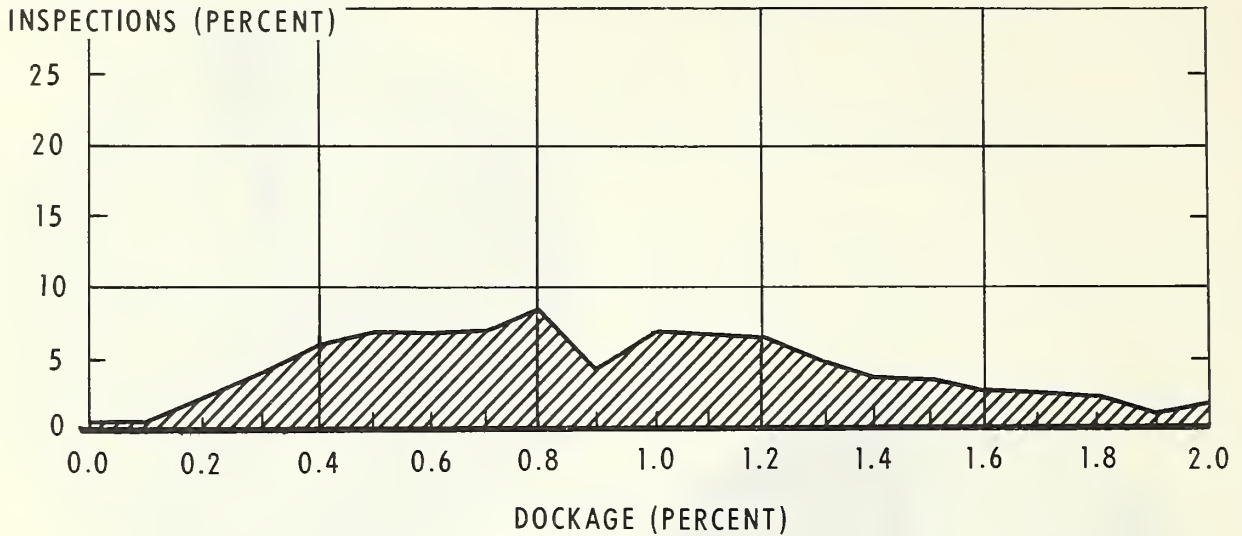


CODE	DOCKAGE REPORTED
	None
	0.5%
	1.0%
	1.5%
	Over 1.5% for proposals A & B, 1.9% for present

U. S. DEPARTMENT OF AGRICULTURE

NEG. AMS 581-63 (9) AGRICULTURAL MARKETING SERVICE

FIGURE 4--HARD RED SPRING WHEAT: PERCENT OF RECEIPT INSPECTIONS WITH DOCKAGE RECORDED AT 0.1 PERCENT INTERVALS, AVERAGE OF FISCAL YEARS 1961-62



U. S. DEPARTMENT OF AGRICULTURE

NEG. AMS 584-63 (9) AGRICULTURAL MARKETING SERVICE

Dockage in Hard Red Spring Wheat was reported at the 1.0 percent level and above for 55 percent of receipts. The proposal would show dockage at 0.5 percent for 30 percent of receipts and at 1.0 percent for 32 percent of receipts. The alternate proposal would affect about 14 percent fewer lots assuming that dockage content in the future would not be less than in 1961 and 1962.

Research findings of State agricultural experiment stations show that dockage in wheat as it comes from the producer is lower than at later steps in marketing channels. North Dakota reported that 42 percent of Hard Red Spring carlots sampled in 1961 and 1962 contained 1.0 percent or more dockage. Colorado estimated dockage content of farm stored Hard Red Winter Wheat at an average of 0.4 percent in 1962. Kansas reported 0.3 percent and Nebraska 0.6 percent dockage content in samples of farm stored wheat from the 1962 crop.

The dockage findings in farm stored wheat are below the averages of dockage in wheat receipts at all levels of commerce.

FIGURE 5--HARD RED SPRING WHEAT: PERCENT OF RECEIPT INSPECTIONS WITH SPECIFIED AMOUNTS OF DOCKAGE UNDER PRESENT STANDARDS AND ALTERNATE PROPOSED REVISIONS, AVERAGE OF FISCAL YEARS 1961-62

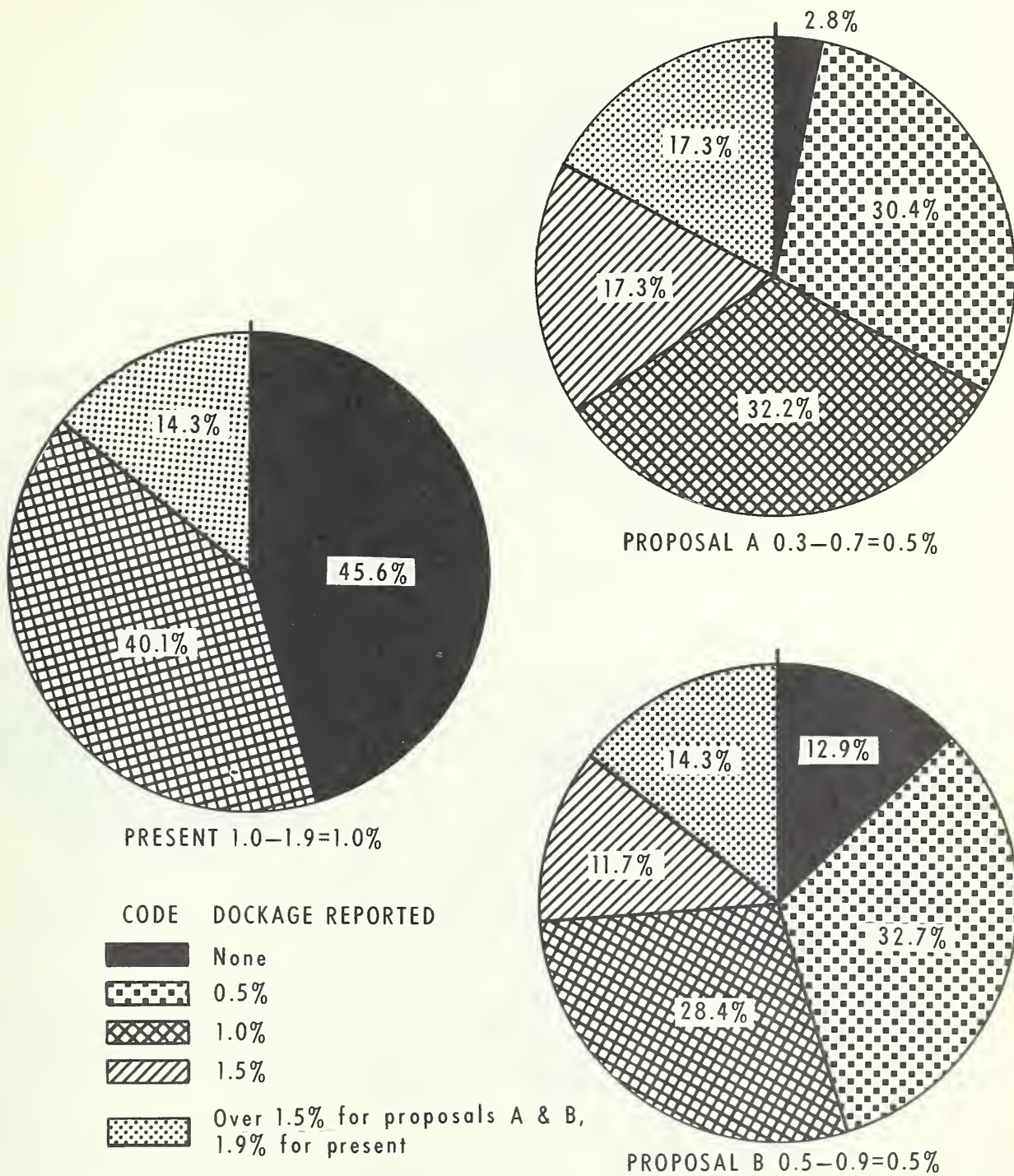
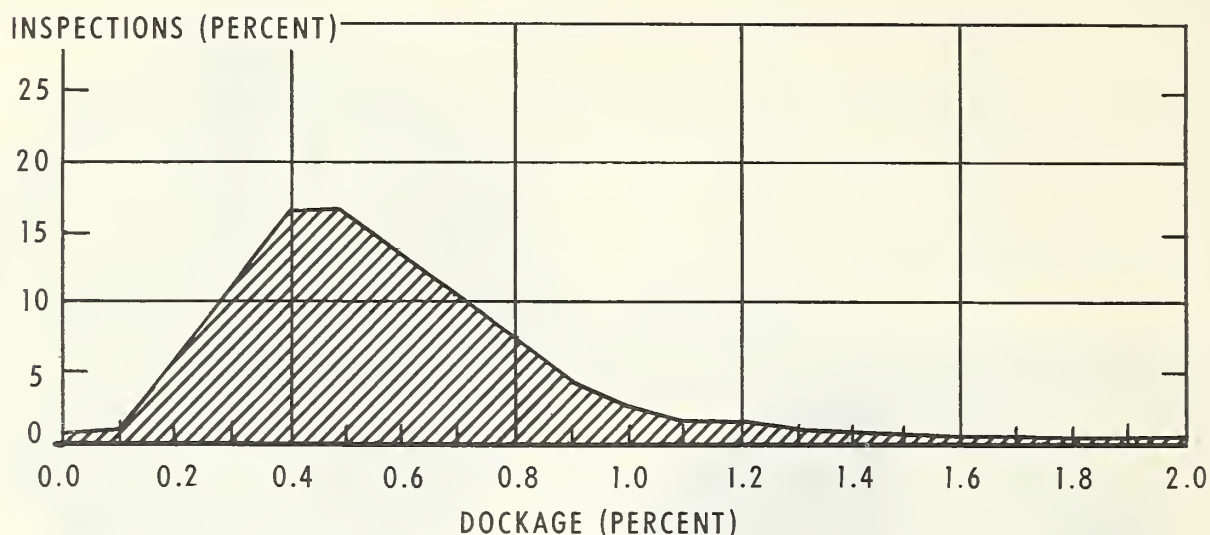


FIGURE 6-HARD RED WINTER WHEAT: PERCENT OF RECEIPT INSPECTIONS WITH DOCKAGE
RECORDED AT 0.1 PERCENT INTERVALS, AVERAGE OF FISCAL YEARS 1961-62



U. S. DEPARTMENT OF AGRICULTURE

NEG. AMS 586-63 (9) AGRICULTURAL MARKETING SERVICE

The expected effect of the proposed change in dockage is greater for Hard Red Winter Wheat than for the other classes. The peak distribution of inspections at 0.5 percent dockage means a greater difference between the present standards and the proposal and its alternate for this class of wheat than the other classes. Under the present standards only 11 percent of Hard Red Winter receipts showed dockage on the certificates issued in 1961 and 1962. If the proposed standards had been in effect, 69 percent of inspections would have reported 0.5 percent dockage and 18 percent of inspections would have reported 1.0 percent dockage. The alternate proposal would have reported 36 percent of inspections with "none" dockage, 53 percent at 0.5, and 8.0 percent at the 1.0 level.

These projections of the possible effect of the proposals are based on amounts of dockage in wheat in 1961 and 1962. An improvement of only 0.2 to 0.3 percent dockage from the 1961-62 averages would mean that the proposed changes would have a substantially smaller effect.

FIGURE 7-HARD RED WINTER WHEAT: PERCENT OF RECEIPT INSPECTIONS WITH SPECIFIED AMOUNTS OF DOCKAGE UNDER PRESENT STANDARDS AND ALTERNATE PROPOSED REVISIONS, AVERAGE OF FISCAL YEARS 1961-62

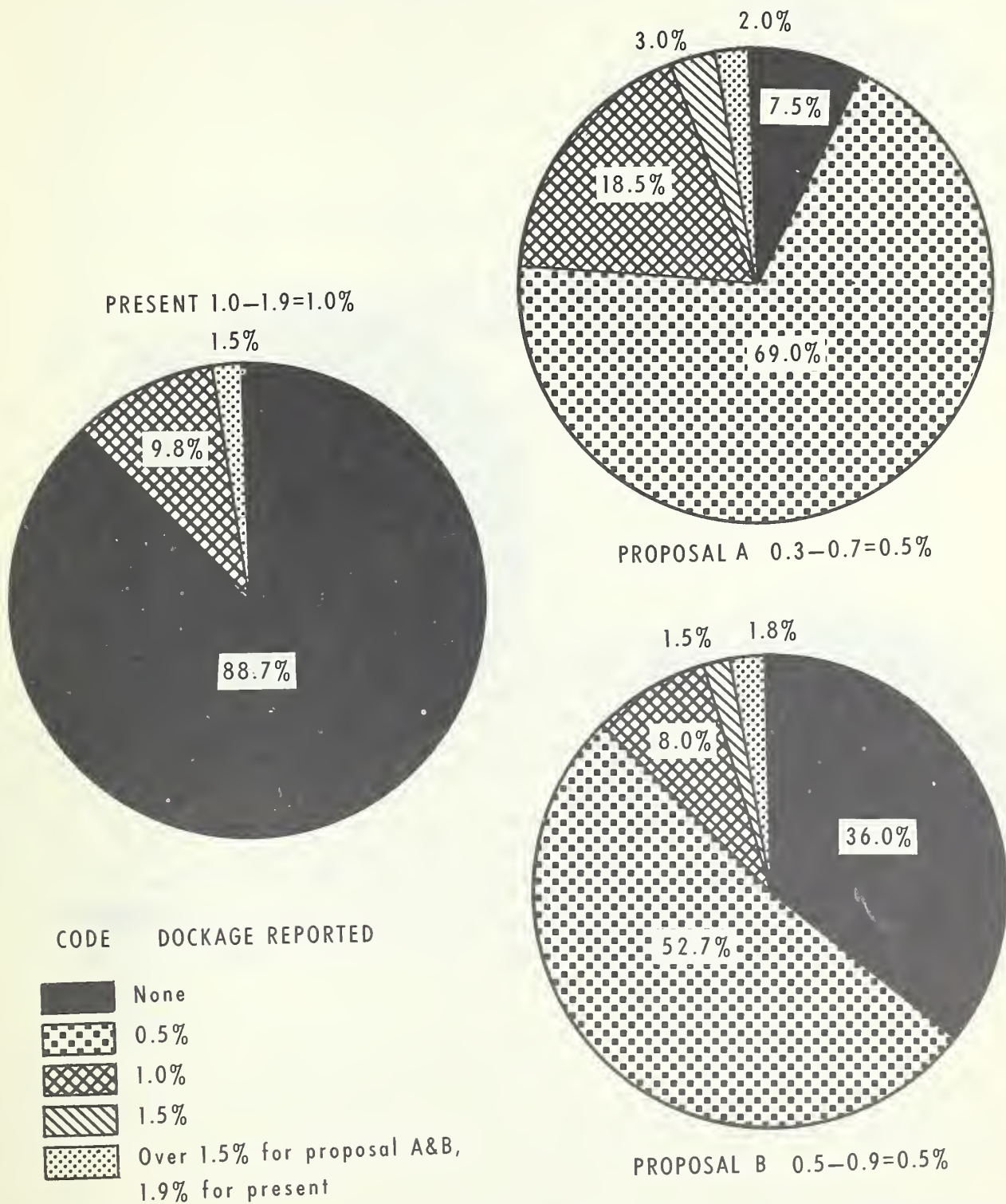
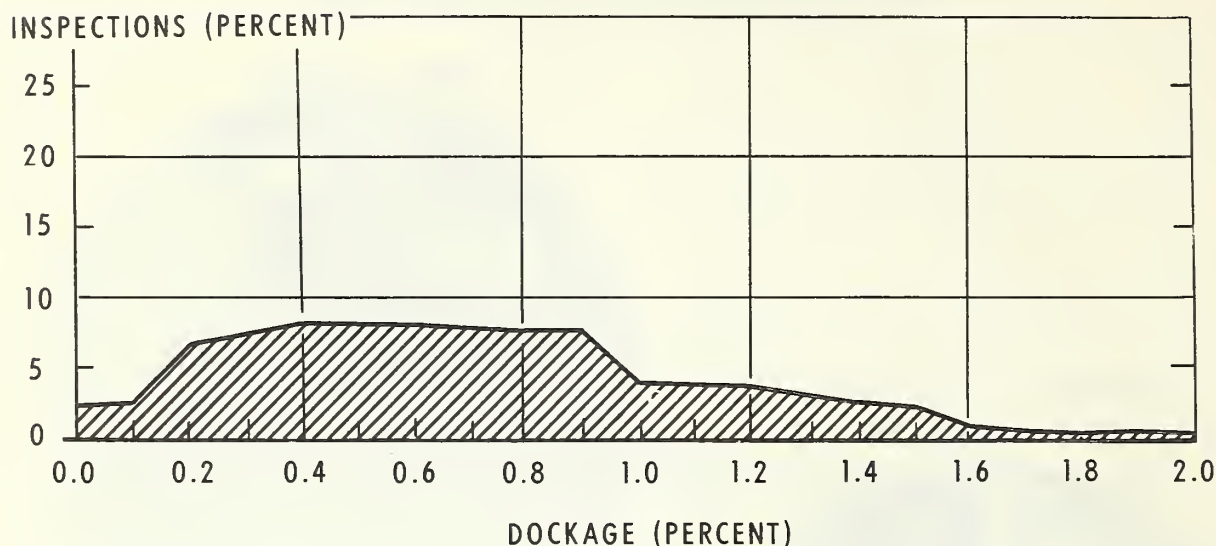


FIGURE 8--WHITE WHEAT: PERCENT OF RECEIPT INSPECTIONS WITH DOCKAGE RECORDED AT 0.1 PERCENT INTERVALS, AVERAGE OF FISCAL YEARS 1961-62



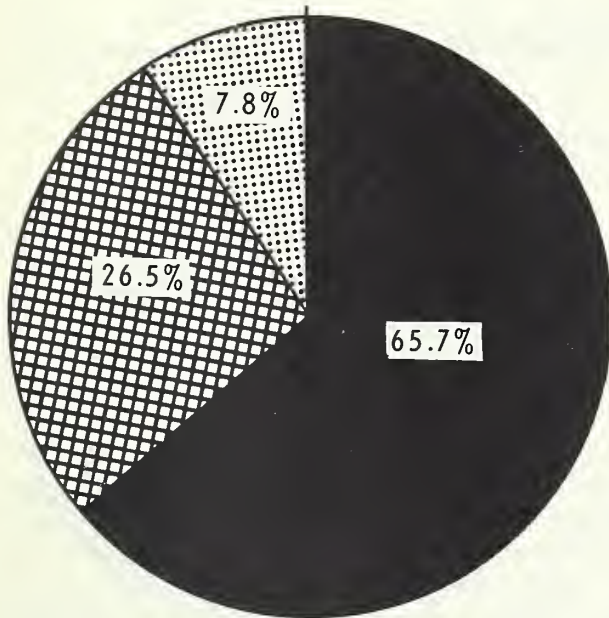
U. S. DEPARTMENT OF AGRICULTURE

NEG. AMS 582-63 (9) AGRICULTURE MARKETING SERVICE

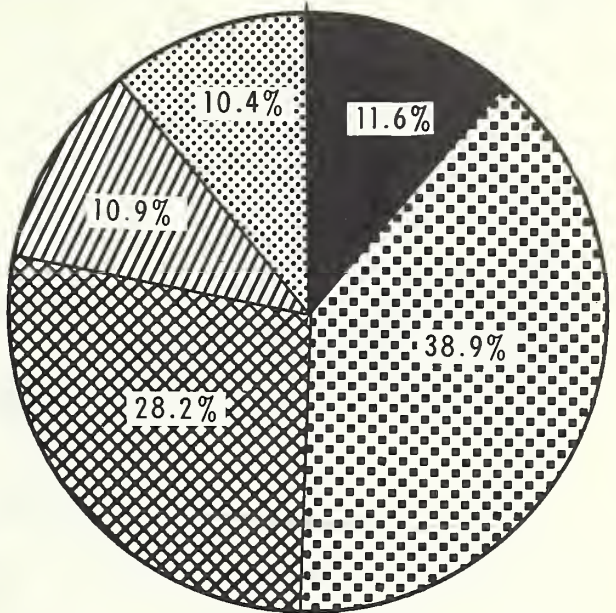
About 66 percent of the inspected lots of White Wheat federally supervised in 1961 and 1962 contained less than one percent dockage. If no improvement in dockage content of future wheat deliveries is made under the proposed change, about 39 percent of all lots would be recorded at 0.5 percent dockage and 28 percent of the lots at one percent dockage. About 12 percent of all lots would be recorded as "none"--that is less than 0.3 percent.

The alternate proposal would list dockage percentage as "none" for 27 percent of inspections, 0.5 for 39 percent, and 1.0 for 18 percent. The distribution of inspections of White Wheat was fairly uniform at dockage content of 0.2 through 0.9 percent. Therefore, the effects of proposed changes regarding dockage would approximate those on the Hard Red Spring Wheat and Durum Wheat classes more closely than those on the Red Winter Wheat classes.

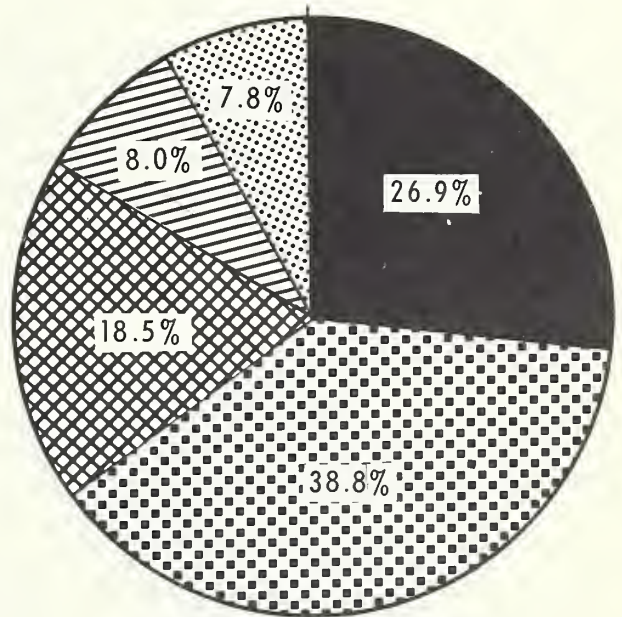
FIGURE 9--WHITE WHEAT: PERCENT OF RECEIPT INSPECTIONS WITH SPECIFIED AMOUNTS OF DOCKAGE UNDER PRESENT STANDARDS AND ALTERNATE PROPOSED REVISIONS, AVERAGE OF FISCAL YEARS 1961-62



PRESENT 1.0-1.9=1.0%



PROPOSAL A 0.3-0.7=0.5%



PROPOSAL B 0.5-0.9=0.5%

CODE DOCKAGE REPORTED



None



0.5%



1.0%

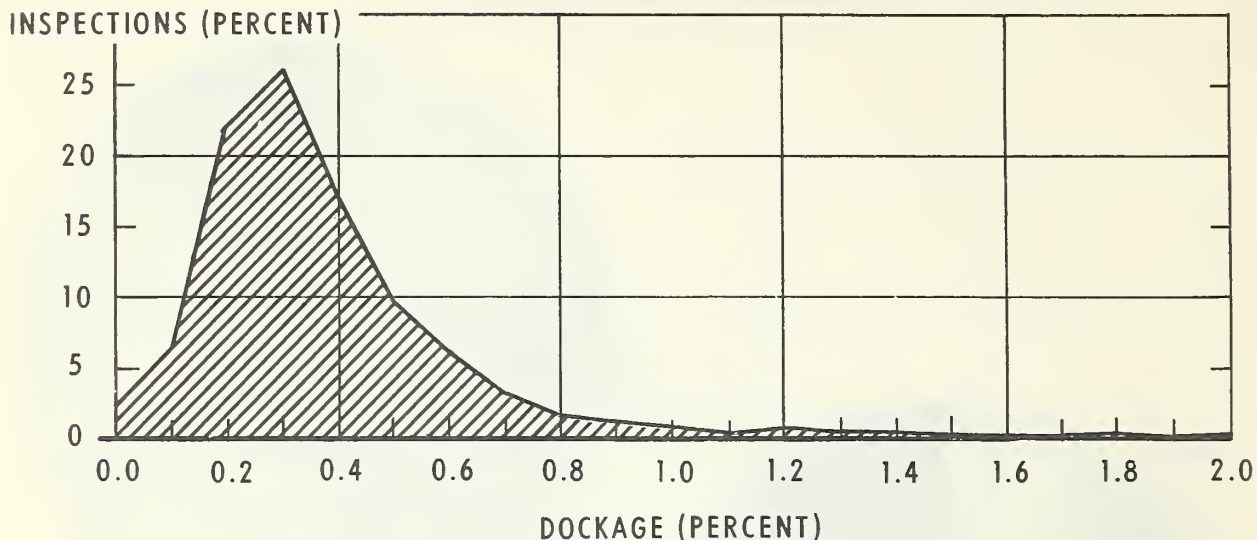


1.5%



Over 1.5% for proposals A & B,
1.9% for present

FIGURE 10—SOFT RED WINTER WHEAT: PERCENT OF RECEIPT INSPECTIONS WITH DOCKAGE RECORDED AT 0.1 PERCENT INTERVALS, AVERAGE OF FISCAL YEARS 1961-62



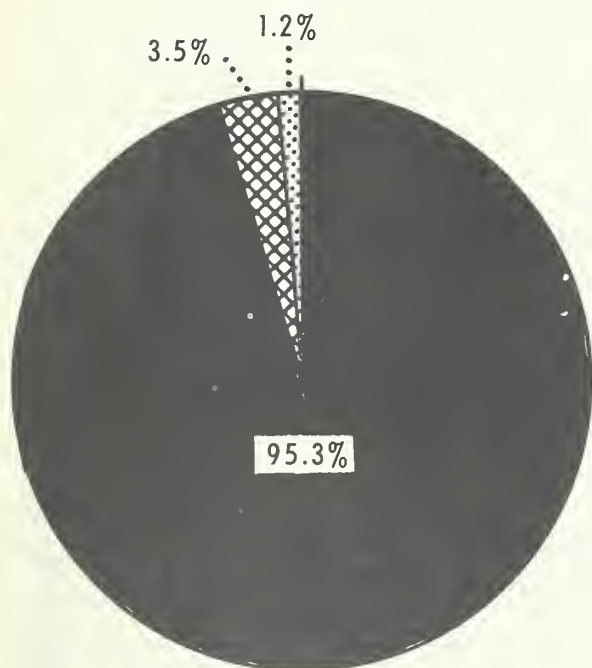
U. S. DEPARTMENT OF AGRICULTURE

NEG. AMS 588-63 (9) AGRICULTURAL MARKETING SERVICE






Distribution of inspections of Soft Red Winter Wheat for 1961 and 1962 fiscal years showed a high peak of 0.3 percent dockage content. Further, the distribution dropped very sharply to insignificance at 1.0 dockage and above. The very low dockage content resulted in 95 percent of receipts listed as "none" dockage under present standards. Even under the proposed change in standards more than 30 percent of receipt inspections would have been recorded as "none," while 61 percent would have been recorded at 0.5 percent dockage and only 5 percent at the 1.0 percent dockage level.

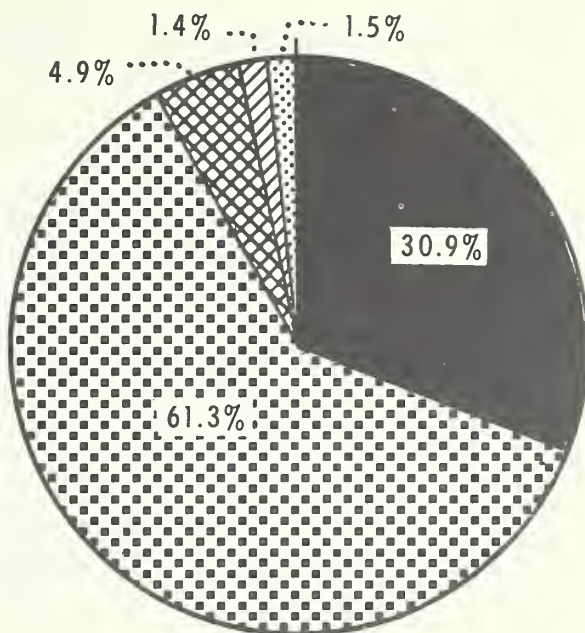
Since dockage was peaked at such a low point the alternate proposal would affect a small portion of inspections. About 74 percent would be recorded as "none" dockage under the alternate proposal and 22 percent of the lots would show 0.5 percent dockage if future wheat deliveries are no more free of dockage than receipts in 1961 and 1962.

FIGURE 11—SOFT RED WINTER WHEAT: PERCENT OF RECEIPT INSPECTIONS WITH SPECIFIED AMOUNTS OF DOCKAGE UNDER PRESENT STANDARDS AND ALTERNATE PROPOSED REVISIONS, AVERAGE OF FISCAL YEARS 1961-62

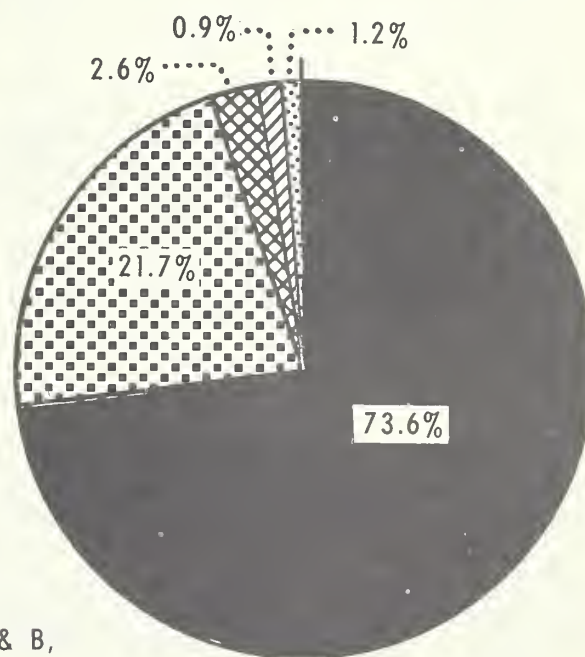


PRESENT 1.0—1.9=1.0%

CODE	DOCKAGE REPORTED
	None
	0.5%
	1.0%
	1.5%
	Over 1.5% for proposals A & B, 1.9% for present



PROPOSAL A 0.3—0.7=0.5%



PROPOSAL B 0.5—0.9=0.5%

Table 9.--Wheat, dockage: Percent of inspections $\frac{1}{4}$ /, dockage at 0.1 percent intervals, 1961 and 1962 $\frac{2}{4}$

: Soft Red Winter $\frac{1}{4}$ /			: Hard Red Winter $\frac{1}{4}$ /			: Hard Red Spring $\frac{1}{4}$ /			: White $\frac{1}{4}$ /			: Durum $\frac{1}{4}$ /		
: Percent: Cum. %			: Percent: Cum. %			: Percent: Cum. %			: Percent: Cum. %			: Percent: Cum. %		
0.0 $\frac{3}{4}$ /	2.5	2.5	0.6	0.6	0.6	0.2	0.2	0.2	2.5	2.5	2.5	0.2	0.2	0.2
0.1	6.4	8.9	1.0	1.6	1.6	0.3	0.5	0.5	2.6	5.1	5.1	0.5	0.7	0.7
0.2	22.0	30.9	5.9	7.5	7.5	2.3	2.8	2.8	6.5	11.6	11.6	3.6	4.3	4.3
0.3	26.0	56.9	12.1	19.6	19.6	4.2	7.0	7.0	7.0	18.6	18.6	6.8	11.1	11.1
0.4	16.7	73.6	16.4	36.0	36.0	5.9	12.9	12.9	8.3	26.9	26.9	7.6	18.7	18.7
0.5	9.5	83.1	16.5	52.5	52.5	6.8	19.7	19.7	7.9	34.8	34.8	7.4	26.1	26.1
0.6	5.8	88.9	13.7	66.2	66.2	6.6	26.3	26.3	8.0	42.8	42.8	7.8	33.9	33.9
0.7	3.3	92.2	10.3	76.5	76.5	6.9	33.2	33.2	7.7	50.5	50.5	6.9	40.8	40.8
0.8	1.8	94.0	7.5	84.0	84.0	8.2	41.4	41.4	7.5	58.0	58.0	7.7	48.5	48.5
0.9	1.3	95.3	4.7	88.7	88.7	4.2	45.6	45.6	7.7	65.7	65.7	2.9	51.4	51.4
1.0	0.7	96.0	2.9	91.6	91.6	6.9	52.5	52.5	4.3	70.0	70.0	6.2	57.6	57.6
1.1	0.4	96.4	1.9	93.5	93.5	6.6	59.1	59.1	4.4	74.4	74.4	5.7	63.3	63.3
1.2	0.7	97.1	1.5	95.0	95.0	6.3	65.4	65.4	4.3	78.7	78.7	5.5	68.8	68.8
1.3	0.4	97.5	1.0	96.0	96.0	4.7	70.1	70.1	3.0	81.7	81.7	4.2	73.0	73.0
1.4	0.4	97.9	0.7	96.7	96.7	3.9	74.0	74.0	2.5	84.2	84.2	3.4	76.4	76.4
1.5	0.3	98.2	0.5	97.2	97.2	3.5	77.5	77.5	2.1	86.3	86.3	3.1	79.5	79.5
1.6	0.2	98.4	0.4	97.6	97.6	2.7	80.2	80.2	1.8	88.1	88.1	2.6	82.1	82.1
1.7	0.1	98.5	0.4	98.0	98.0	2.5	82.7	82.7	1.5	89.6	89.6	2.2	84.3	84.3
1.8	0.2	98.7	0.3	98.3	98.3	2.2	84.9	84.9	1.3	90.9	90.9	2.0	86.3	86.3
1.9	0.1	98.8	0.2	98.5	98.5	0.8	85.7	85.7	1.3	92.2	92.2	0.6	86.9	86.9
2.0	0.3	99.1	0.2	98.7	98.7	1.6	87.3	87.3	0.9	93.1	93.1	1.5	88.4	88.4
Over 2.0 :	0.9	100.0	1.3	100.0	100.0	12.7	100.0	100.0	6.9	100.0	100.0	11.6	100.0	100.0

 $\frac{1}{4}$ / Federal supervised $\frac{2}{4}$ / Weighed by totaling observations for each class and interval and dividing by total number of observations $\frac{3}{4}$ / Defined as less than 0.1% dockage

Number of samples: Soft Red Winter 8,226;
Hard Red Winter 37,967; Hard Red Spring 17,494;
White 11,195; Durum 4,261

Table 10.--Wheat, dockage: Export cargoes of wheat surveyed in 1962-1963 with dockage content as indicated

Dockage	Hard Red Spring Wheat		Hard Red Winter Wheat	
<u>Percent</u>	<u>No.</u>	<u>Percent</u>	<u>No.</u>	<u>Percent</u>
0.0.....				
0.1.....			4	0.4
0.2.....			7	0.6
0.3.....	1	0.6	64	6.0
0.4.....	1	0.7	201	18.6
0.5.....	15	9.8	262	24.2
0.6.....	26	17.0	269	24.9
0.7.....	37	24.2	194	17.9
0.8.....	30	19.6	55	5.1
0.9.....	12	7.8	23	2.1
1.0.....	7	4.6		
1.1.....	5	3.3	1	0.1
1.2.....	3	2.0	1	0.1
1.3.....	8	5.2		
1.4.....	3	2.0		
1.5.....	2	1.3		
1.6.....	1	0.6		
1.7.....	2	1.3		
Total.....	153	100.0	1,081	100.0

A survey of 153 cargoes of Hard Red Spring Wheat exported 1962-63 showed that 20 percent of the cargoes contained 1.0 percent or more dockage. During the same period a survey of 1,081 cargoes of Hard Red Winter Wheat showed only 0.2 percent of the cargoes with 1.0 percent or more dockage. This data shows that the average dockage content was higher in the export cargoes of both Hard Red Spring Wheat and Hard Red Winter Wheat than the average dockage content for wheat receipts at markets throughout the channels of commerce or that for farm-stored wheat.

Data on Total Defects

The data in Table 11 was obtained from more than 2,500 composite samples of farm-stored wheat in five major wheat States. In every State "Total defects" was less than in the proposed standards. This would indicate that the proposed factor of "total defects" would not have an adverse effect on wheat farmers.

Exports of wheat surveyed show a different picture. Total defects exceeded the proposed tolerance in every one of 33 cargoes of Hard Red Spring Wheat. About one-third of the 46 cargoes of No. 2 Hard Red Spring Wheat exceeded the 5 percent maximum limit proposed. In exports of Hard Red Winter Wheat, 85 percent of No. 1 grade and 13 percent of No. 2 grade cargoes exceeded the proposed maximum on total defects.

Figures 12 and 13 show, by grades, present and proposed maximum limits for total defects, wheat of other classes, and maximum amount of dockage permitted without it being recorded on inspection certificates.

Table 11.--Wheat, defects 1/: Percent of defects in farm-stored wheat by specified States, 1962 crop year

State	Wheat class	Grade	Samples	Shrunken & broken	Total damage	Foreign material	Total defects
		No.	No.	Percent	Percent	Percent	Percent
North Dakota.....	HRS	1	181	0.73	0.42	0.31	1.46
Colorado....	HRW	1	658	1.00	0.00	0.10	1.10
Kansas.....	HRW	1	238	0.90	0.40	0.10	1.40
Nebraska....	HRW	3	1,000	1.75	0.11	0.12	1.98
South Dakota.....	HRS	3	297	2.20	0.20	0.06	2.56
South Dakota.....	HRW	3	187	3.35	0.00	0.15	3.50

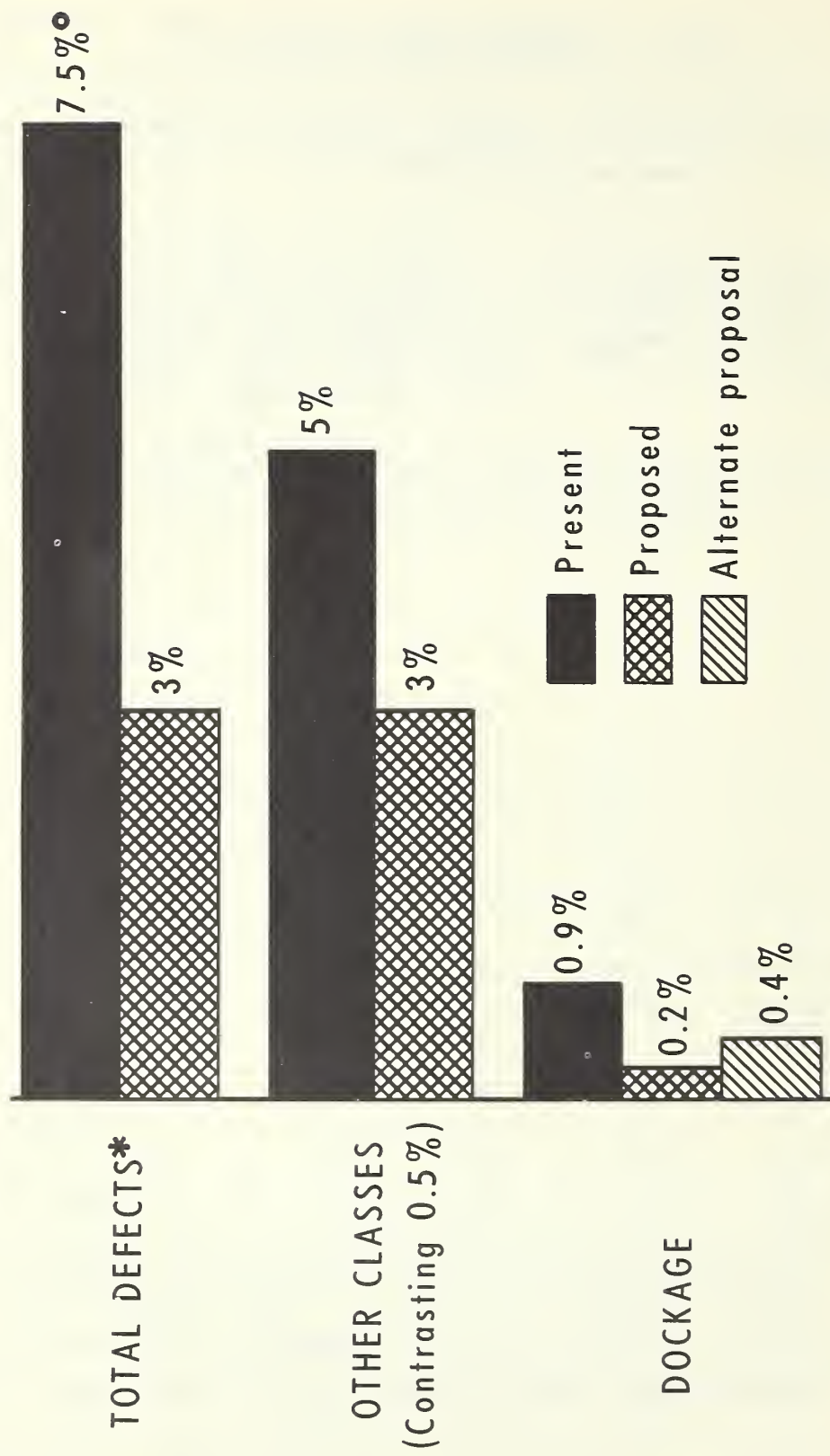
1/ Defects include damaged kernels, foreign material and shrunken and broken kernels

Table 12.--Wheat, defects 1/: Export cargoes of wheat surveyed in
1962 - 1963 with defects as indicated

Defects	Hard Red Spring Wheat				Hard Red Winter Wheat			
	No. 1		No. 2		No. 1		No. 2	
Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
0.5 - 1.0.....					1	0.3		
1.1 - 1.5.....								
1.6 - 2.0.....			1	2.2				
2.1 - 2.5.....					6	1.8		
2.6 - 3.0.....					43	12.9	4	1.8
3.1 - 3.5.....			3	6.5	100	30.1	24	11.1
3.6 - 4.0.....	4	12.1	4	8.7	76	22.8	59	27.2
4.1 - 4.5.....	8	24.2	6	13.0	68	20.4	63	29.0
4.6 - 5.0.....	15	45.5	17	37.0	31	9.3	38	17.5
5.1 - 5.5.....	3	19.1	8	17.4	6	1.8	14	6.5
5.6 - 6.0.....	3	9.1	4	8.7	2	0.6	13	6.0
6.1 - 6.5.....			1	2.2				
6.6 - 7.0.....			1	2.2			2	0.9
7.1 - 7.5.....			1	2.1				
Total	33	100.0	46	100.0	333	100.0	217	100.0

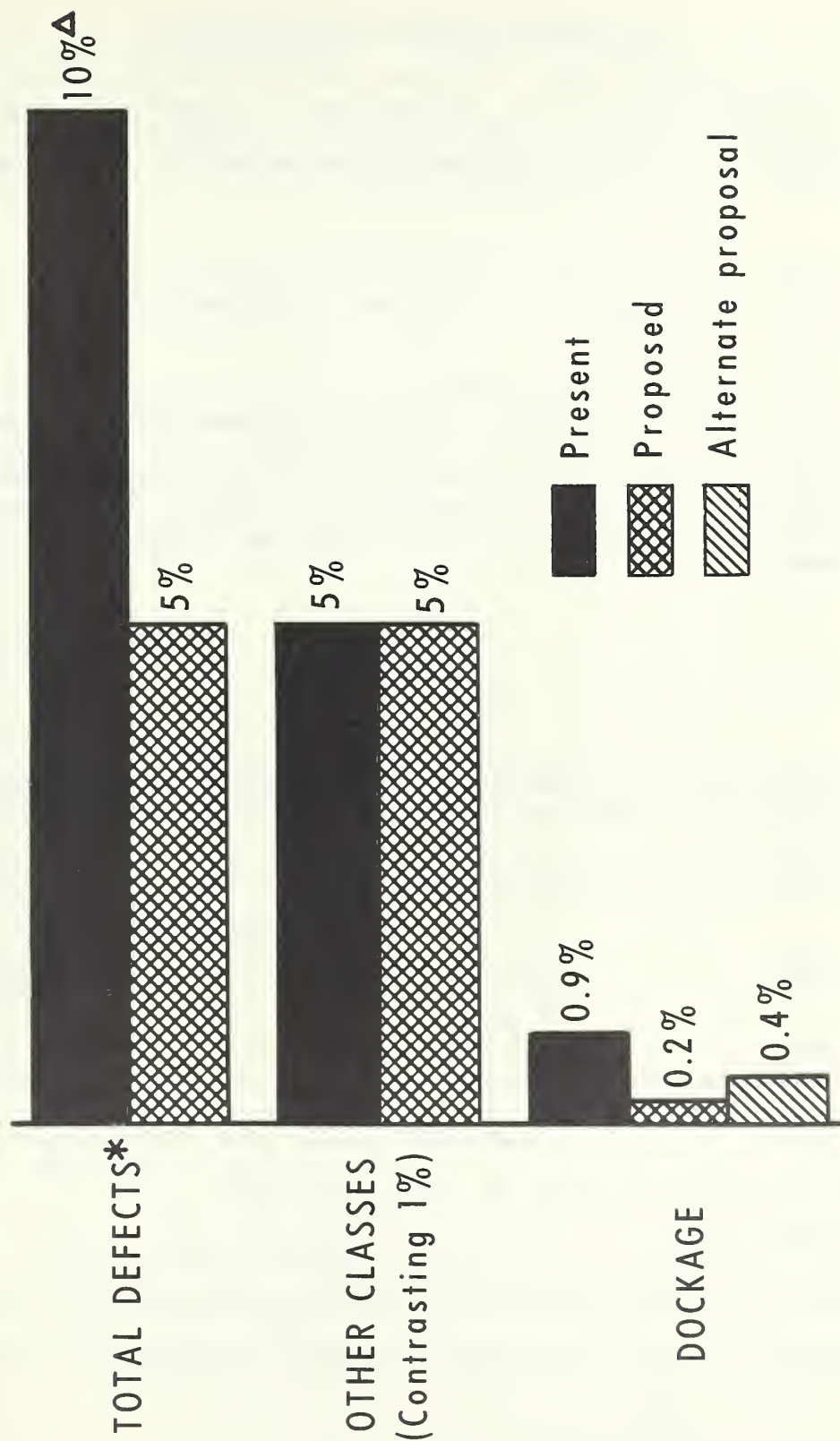
1/ Defects include damaged kernels, foreign material, and shrunken and broken kernels

FIG. 12-COMPARISON OF PRESENT AND PROPOSED FACTORS



*DAMAGED KERNELS, FOREIGN MATERIAL, SHRUNKEN AND BROKEN KERNELS •EXCEPT DURUM, WHICH IS 10.5%.

FIG. 13-COMPARISON OF PRESENT AND PROPOSED FACTORS



*DAMAGED KERNELS, FOREIGN MATERIAL, SHRUNKEN AND BROKEN KERNELS ^ΔEXCEPT DURUM, WHICH IS 13%.

Data on Shrunken and Broken Kernels

Shrunken and broken kernels influence end-use value by reducing the quantity of clean millable wheat. The problem of shrunken and broken kernels is most acute in Durum wheats. The present grain standards permit handpicking of broken kernels in Durum in addition to sieve separation of shrunken and broken kernels. In the other classes of wheat only the sieve separation is used.

The proposed change reduces the quantity of shrunken kernels in grade No. 1 from 5.0 to 3.0 percent for all classes and eliminates handpicking of broken kernels in Durum wheat.

Under the present standards about one-half of the Durum Wheat inspections (Table 14), graded No. 2 or better. Under the proposed revision almost all of the inspections would grade No. 2 or better (Table 13). The proposal to set the limit of No. 1 grade at 3.0 percent would still permit almost 90 percent of the Durum inspections to grade No. 1. For the other classes the percent grading No. 1 on the factor shrunken and broken kernels would be even higher.

Table 13.--Durum Wheat: Percent of shrunken and broken kernels (determined by sieve only), inspected receipts 1/, fiscal year 1963

Item	Shrunken and Broken Kernels						
	1.0	2.0	3.0	4.0	5.0	Over 5.0	Total
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
Percent of inspections.....	3.5	36.8	48.2	8.5	1.9	1.1	100.0
Cumulative percent of inspections.....	3.5	40.3	88.5	97.0	98.9	100.0	XXX

1/ 1,853 inspected carlot receipts, Form GR-189, from Minneapolis, Grand Forks, and Duluth

Table 14.--Durum Wheat: Percent of shrunken and broken kernels (determined by both sieve and handpicking), inspected receipts 1/, fiscal year 1963

Percent sieve and handpicked	Percent of inspections	Cumulative percent of inspections
0.5 Sieve or less 7.5 Handpicked or less	0.5	0.5
0.51 - 1.00 Sieve 7.0 Handpicked or less	2.3	2.8
1.01 - 1.50 Sieve 6.5 Handpicked or less	9.8	12.6
1.51 - 2.00 Sieve 6.0 Handpicked or less	16.5	29.1
2.01 - 2.50 Sieve 5.5 Handpicked or less	15.3	44.4
2.51 - 3.00 Sieve 5.0 Handpicked or less	5.8	50.2
3.01 - 3.50 Sieve 4.5 Handpicked or less	1.0	51.2
3.51 - 4.00 Sieve 4.0 Handpicked or less	0.3	51.5
4.01 - 4.50 Sieve 3.5 Handpicked or less	0.1	51.6
4.51 - 5.00 Sieve 3.0 Handpicked or less	0.2	51.8
Over 5.00 sieve and under 3.00 handpicked	48.2 <u>2/</u>	100.0

1/ 1,853 inspected carlot receipts, Form GR-189, at Minneapolis, Grand Forks, and Duluth

2/ Exceeding 5.0 percent shrunken and broken through sieve, Grade 3 or lower

Data on Moisture Limits

The keeping quality of wheat depends on various factors--moisture content, temperature, composition of air within the grain, amount and kinds of micro-organisms present, and the initial soundness of the wheat. Because there are so many variable factors, it is impossible to establish a definite moisture level below which wheat will store safely and above which it will spoil.

At moisture levels above about 12 percent, the rate of respiration in stored wheat increases rapidly and small differences in moisture content may account for large differences in keeping quality. Experience has shown that at temperatures prevailing in summer in most of the wheat-producing areas of the U.S., wheat stored at moisture levels exceeding 13.5 percent will increase rapidly in fat acidity, will decrease rapidly in viability, and is in danger of developing germ damage characteristic of "sick" wheat. Musty odors will frequently develop after extended storage periods.

At 14.0 percent or even 14.5 percent moisture content, wheat may be kept satisfactorily for limited periods of time. But under practical storage conditions any lot of wheat of a known average moisture content will contain or--because of moisture migration--will soon develop areas with higher moisture content than the average of the lot. Spoilage is likely to develop rapidly in these "wet" spots and spread to the rest of the lot. To avoid this situation, it is highly desirable that the average moisture content of any lot of wheat being stored or shipped be below the "critical" level.

Most scientific evidence as well as practical experience indicates that the present moisture limits in the wheat standards are too high to assure safe storage or shipment of wheat during the warm seasons of the year. A reduction of the maximum moisture limit to 13.5 percent for all classes of wheat will materially increase the safety with which wheat not grading "Tough" can be shipped or stored.

Table 15.--Wheat, moisture: Percent of moisture, by class, average fiscal years 1961 and 1962

Percent moisture	Hard Red Winter		Soft Red Winter		Hard Red Spring		White		Durum	
	Percent	Cum. %	Percent	Cum. %	Percent	Cum. %	Percent	Cum. %	Percent	Cum. %
Under 12.0....	74.0	74.0	7.0	7.0	74.7	74.7	78.7	78.7	82.9	82.9
12.0....	11.2	85.2	7.7	14.7	11.7	86.4	1.4	80.1	12.3	95.2
12.5....	7.4	92.6	13.4	28.1	8.0	94.4	2.4	82.5	3.4	98.6
13.0....	4.0	96.6	22.1	50.2	3.1	97.5	5.0	87.5	0.9	99.5
13.5....	1.8	98.4	24.7	74.9	1.4	98.9	5.2	92.7	0.2	99.7
14.0....	0.7	99.1	14.4	89.3	0.7	99.6	3.4	96.1	0.1	99.8
14.5....	0.5	99.6	6.7	96.0	0.2	99.8	2.2	98.3	0.1	99.9
15.0....	0.2	99.8	2.6	98.6	0.1	99.9	1.1	99.4	*	*
15.5....	*	*	0.8	99.4	*	*	0.3	99.7	-0-	-0-
16.0....	*	*	0.4	99.8	*	*	0.2	99.9	-0-	-0-
Over 16.0....	*	*	0.2	100.0	*	*	0.1	100.0	*	*
Total.....	100.0	XXX	100.0	XXX	100.0	XXX	100.0	XXX	100.0	XXX
Number of inspections..	37,972	XXX	8,225	XXX	17,496	XXX	11,195	XXX	4,265	XXX

* Less than .05%

Form GR-189, Federal Supervised Inspected Receipts

The proposed minimum moisture limits for "Tough Wheat" would have no significant effect on Hard Red Winter, Hard Red Spring, or Durum Wheat according to findings in 59,733 federally supervised inspections in 1961 and 1962. This data shows that less than 2 percent of inspections of the above classes contained 13.5 percent or more moisture. White Wheat had 7.3 percent of inspections at or above the proposed minimum. The greatest effect would be on Soft Red Winter Wheat. In this class, it is expected that greater care may be necessary to stay within moisture limits necessary for safe storing of wheat.

Export wheat would not be affected by this proposal as indicated by the cargo wheat survey (Table 16).

Estimates made by State agricultural experiment stations indicate that most harvested wheat contains less than 13.5 percent moisture. Surveys made in Colorado, for example, estimate the average moisture in wheat at country elevators during harvest at 10.7 percent in 1961 and 12.3 percent in 1962. North Dakota's surveys reported an average of 11.2 percent moisture for the 1961 crop of Hard Red Spring Wheat, with a range of 9.1 to 13.9 percent. Moisture content for the 1962 crop averaged 12.1 percent and ranged from 9.5 to 16.4 percent. The lots with 13.5 percent or higher moisture in 1962 were 8.9 percent of the total.

Table 16.--Wheat, moisture: Export cargoes of wheat, 1962-1963 with moisture shown at 0.5 percent intervals

Moisture		Hard Red Spring Wheat		Hard Red Winter Wheat
Percent	No.	Percent	No.	Percent
8.1 - 8.5.....			1	0.1
8.6 - 9.0.....			1	0.1
9.1 - 9.5.....			7	0.6
9.6 - 10.0.....			29	2.7
10.1 - 10.5.....			51	4.7
10.6 - 11.0.....	10	6.5	63	5.8
11.1 - 11.5.....	63	40.9	200	18.4
11.6 - 12.0.....	23	14.9	388	35.8
12.1 - 12.5.....	36	23.4	255	23.5
12.6 - 13.0.....	15	9.7	81	7.5
13.1 - 13.5.....	7	4.6	6	0.6
13.6 - 14.0.....			2	0.2
Total	154	100.0	1,084	100.0

Data on Special Grade of "Heavy Wheat"

Test weight from the inception of grain grading has been recognized as an indicator of quality and thus value. The present wheat standards define only the minimum test weights permitted per grade and do not recognize superior test weights (values) for any grade, except No. 1 Heavy Hard Red Spring Wheat. Test weight has an increased value for Hard Red Spring Wheat and thus like value must exist for other classes with a similar end use. The influence of this additional value--due to superior test weights--should exist for grades No. 1, 2, and 3, since the grade was determined on the basis of other grade determining factors.

The proposal to recognize superior test weights for all classes (60 lbs. for Hard Red Spring and 62 lbs. for other classes, grades No. 1, 2, and 3) would permit about 20 percent of Hard Red Spring and Durum Wheats to grade "Heavy" compared to 38 percent Hard Red Winter, 10 percent White, and about 3 percent Soft Red Winter (Table 17) based on the pattern of test weight findings recorded in 1961 and 1962. The effect of this proposal can be expected to vary in the same direction as deviations from the 1961 and 1962 data. If test weight averages lower, the effect of the proposal would be less. If higher, the effect would be greater.

Table 17.--Wheat: Test weight per bushel 1/, by class, 1961 and 1962 2/

Test weight	Hard Red Spring	Hard Red Winter	Durum	Soft Red Winter	White
Pounds	Percent	Percent	Percent	Percent	Percent
		<u>1961</u>			
62.0 or more.....	1.7	38.1	14.6	1.7	9.5
60.0 to 61.9.....	14.2	48.5	67.7	42.3	41.5
58.0 to 59.9.....	39.9				
		<u>1962</u>			
62.0 or more.....	0.5	39.5	24.9	5.2	13.7
60.0 to 61.9.....	23.6	44.2	63.8	32.2	42.6
58.0 to 59.9.....	47.4				
		<u>1961 - 1962 combined</u>			
62.0 or more.....	1.2	38.7	18.9	3.4	10.5
60.0 to 61.9.....	18.3	46.5	65.9	37.5	42.0
58.0 to 59.9.....					

1/ Expressed in percent of total in each class

2/ Federal supervised receipts only, fiscal years

Data on "Wheat of Other Classes"

The mixing of "wheat of other classes" into a specific class tends to lower the end-use value of that class of wheat. The proposed change reduces the quantity of wheat of other classes from 5.0 to 3.0 percent in grade No. 1 only.

"Wheat of other classes" is more significant in certain classes than others. Data on 1963 exports (Table 18) indicate that about a quarter of the Hard Red Winter Wheat now grading No. 1 would be reduced to No. 2 if future deliveries continued to have the same percent of "wheat of other classes" as in 1963 fiscal year exports. However, it is reasonable to assume that exporters would tend to comply with standards in effect at time of shipment. Thus, a change in the tolerance for this factor would not necessarily result in lowering the grade for any exports. This proposal would have virtually no effect on the other classes shown. Through more careful handling of Hard Red Winter Wheat this proposal should have little effect upon grade determination of this class also.

Table 18.--Wheat of other classes: Amount of wheat of other classes, by class and grade, all cargo exports 1/, 1963 fiscal year

Class and grade	2.9 Percent and less	3.0 to 5.1	Number of observations
	<u>Percent</u>	<u>Percent</u>	
Hard Red Winter No. 1	77.7	22.3	428
Hard Red Spring No. 1.....	95.4	4.6	322
White No. 1.....	99.7	0.3	355
			1,105 Total

1/ Data taken from Ship Loading Logs, Form GR-380

